

European Pine Shoot Moth
Rhyacoinia buoliana
Quarantine Support Survey

Montana has had a quarantine for the European pine shoot moth (EPSM) since prior to 1962. This insect is a pest in production of lumber, nursery trees and Christmas trees that are long-needled pines. Feeding by the larval stage in the growing tips causes death of leaders, resulting in trees with Y-shaped trunks, or other deformities, which are aesthetically unpleasing (lowering value in nursery and Christmas tree trade) or are not usable for major lumber markets, due to a need for additional work to salvage cuttable trunks.



Adult European pine shoot moth, collected on a wing trap baited with species-specific pheromone and placed in a tree in Kalispell, MT (2006), during routine quarantine support surveillance.

The insect itself is very small. The wingspan of the typical adult is under ¼ inch. However, the adult is very brightly colored, with an orange and silver patterning on the wings. There are a number of native pine shoot moths with similar coloration, so identification is dependent on dissection of the male genitalia. The larvae initially feed in the tips of the branches in the new year's growth, webbing the needles together for protection. Older larvae move to the needle sheath, and mine into individual needles, after which they move on to the needle buds. They overwinter as larvae. Larvae emerge to feed again in the spring. This spring feeding is the most damaging, as it involves large larvae feeding on new foliage. The larvae pupate in the needle foliage in the tunnels and webbing they created while feeding. Moths emerge in mid-summer.

Monitoring for the EPSM is done using wing traps and species specific pheromones. These pheromones are attractive to the male moths, but female moths can also be caught in the traps.

The majority of the area of concern for EPSM is in the western portion of the state, west of the continental divide. This area is trapped each year for the presence of EPSM.



Wing trap for monitoring European pine shoot moths.



Locations of European pine shoot moth traps throughout western Montana for routine surveillance in support of the quarantine.

During 2007, two hundred and six EPSM traps were placed in Montana for routine surveillance in support of the quarantine. Additional traps were placed in delimiting surveys in three towns: Baker (second year of trapping in response to an uncertified movement of Christmas trees), Kalispell (delimiting survey in response to discovery of two moths in the same trap during 2006), and Great Falls (delimiting survey in response to discovery of uncertified tree introduction from a known infested area).

No suspect EPSM were found during this survey.

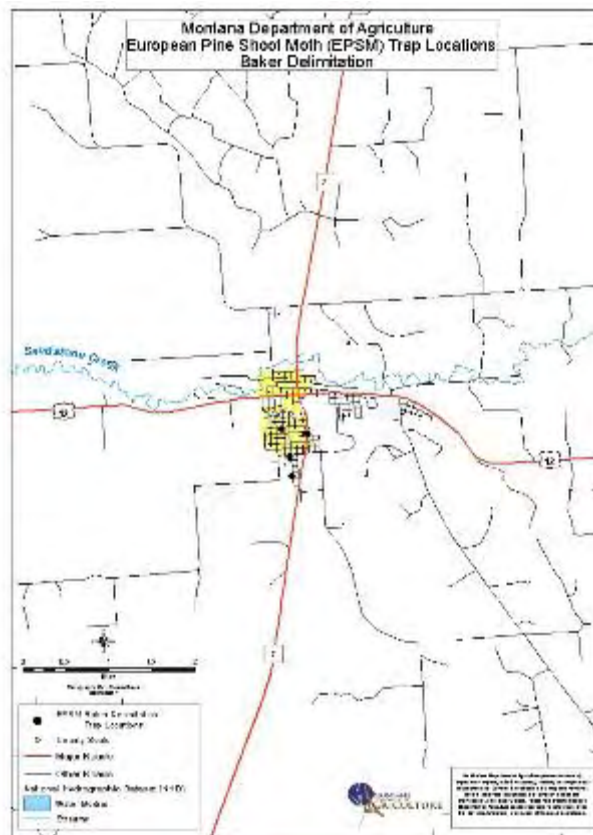
References

<http://www.entomology.umn.edu/cues/Web/130EuropeanPineShootMoth.pdf>
<http://www.forestpests.org/northeast/europineshoot.html> - Aug 31, 2004

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Baker Delimiting Survey – Second Year

During the 2005 Christmas holiday season, the Montana Department of Agriculture was notified by the USDA APHIS PPQ that a shipment of Christmas trees from an uncertified nursery in a quarantined state known to be infested with European pine shoot moth (EPSM) was brought into the state, and distributed in the area of Baker, Montana (Fallon County). This area is in far eastern Montana, and there are few host trees in the immediate vicinity. However, all host trees in the area are of very high value to the community, which is contained in a relatively small area (less than 1 mile square). The town was trapped at a density of 35 traps throughout the community in the first year. Although a moth resembling EPSM was found during this trapping, the species could not be definitely determined (it was a female moth). The closest identification was to a native shoot moth, so it was decided to continue to the delimiting survey, but concentrating in the area where that moth was taken, and also in the area where the trees were most likely to have been distributed from.

During 2007, five traps were placed in close proximity to the area described above (a lot near the high school). Again, no moths were collected from these traps. Further trapping in Baker will not be conducted.



Placement of traps for the second year of trapping in Baker, Montana following shipment of an uncertified group of Christmas trees from a known EPSM infested area.

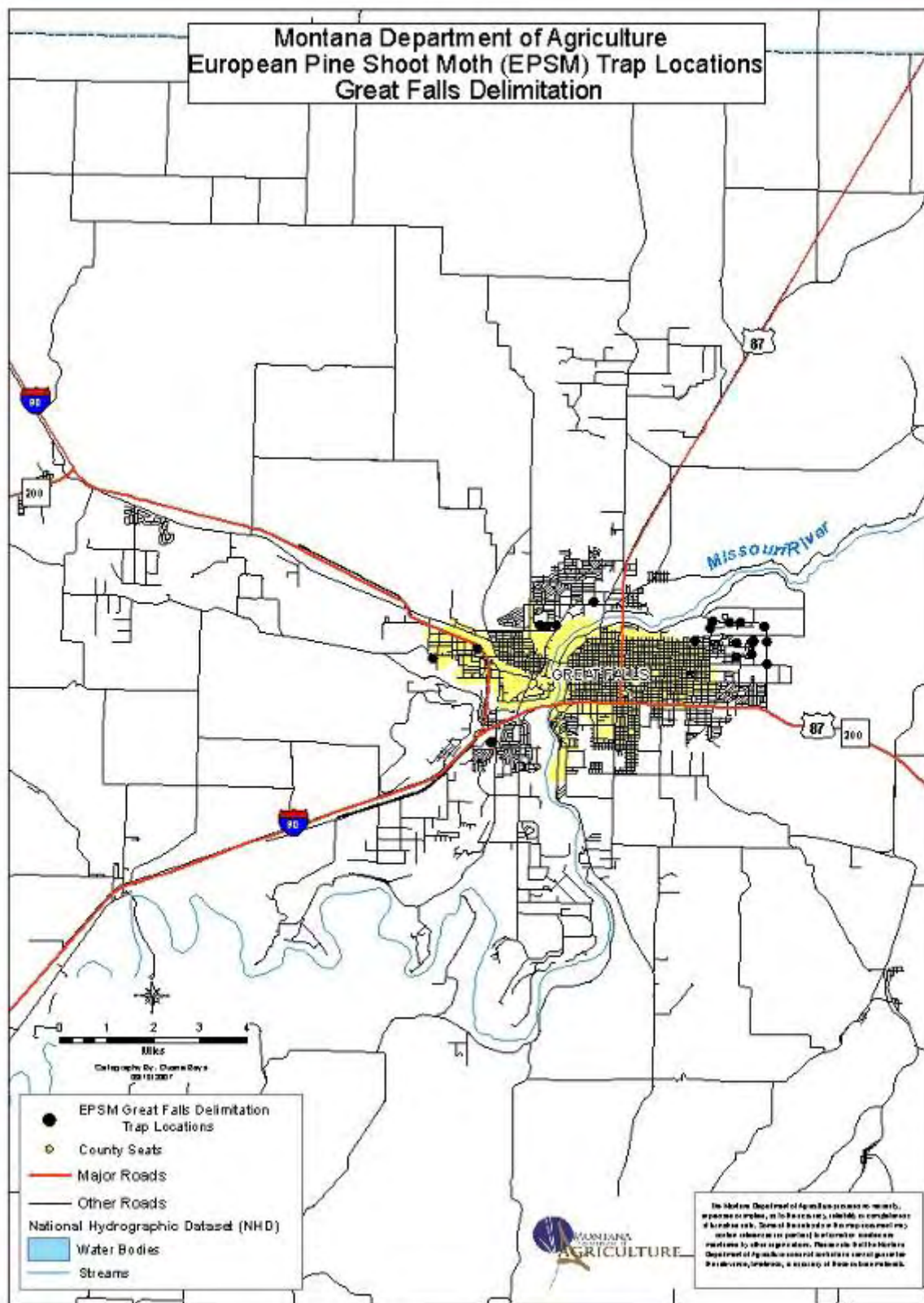
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Great Falls Delimiting Survey

An inadvertent introduction of Austrian pine from an infested area, without documentation of freedom from infestation by European pine shoot moth (EPSM) led to a delimitation survey in Great Falls. The pines were brought from a nursery in Oregon by a landscape company. While the nursery generally treated for various insects, there was no proof that the trees had been treated in such a way as to mitigate the danger of introduction of EPSM. In addition, the nursery had recently been the site of a positive EPSM catch on a pheromone trap.



Austrian pines that were imported to Montana without the proper certification, on their way to being destroyed.

A total of 28 traps were placed throughout the Great Falls area, primarily in the area of the holding yard where the suspect trees had been held. In addition to the delimitation survey, the landscape company was required to destroy all of the trees from the Oregon source. No EPSM were found in the traps. Additional traps will be run during the 2008 trapping season, directly around the holding yard.



Trapping sites in the Great Falls area for European pine shoot moth, 2007. Each black dot is a single pheromone trap.

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Kalispell Delimiting Survey

During the survey activities of 2006, a trap containing two suspect moths was collected in the town of Kalispell. The moths were subsequently identified as European pine shoot moth (EPSM) by identifiers at the USDA ARS facility in Beltsville, Maryland. As a result of this find, a delimitation survey was required in the area directly surrounding the trap site.

During 2006, immediately after the find, additional investigation of the area revealed that while it contained several groups (and species) of pines, none appeared to have any damage. The actual trap was in a small grove of Ponderosa pine that was directly along a hiway. The trees were not planted, but were naturally occurring as part of the vegetation in the area. The area directly south of the trees was an automobile dealership, and the other areas were primarily housing.

Interviews with the people in the area, and with personnel at nearby nurseries indicated that there had been no problems with insects in the trees in the area. However, the parking lot of the automobile dealership does serve as an overnight stop for various types of trucks including lumber and nursery trucks, and has been known to be the location of Christmas tree sales.

In 2007, four extra traps were put in the general area of the positive trap.



Adult European pine shoot moth, magnified. Photo by Eric LaGasa, Washington State Department of Agriculture.

